



**Cyfoeth
Naturiol**
Cymru
**Natural
Resources**
Wales

Ipsen Biopharm, Ash Road, Model Review

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Rev No 1.0

Revision	Prepared By	Checked By	Date
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Colour coding with in the report is used as follows:

Green – No change necessary (suggestion for improvement / good practice but which is unlikely to change the model outcome)

Amber – Preferred but not compulsory (non-standard method or method not following guidance but unlikely to have impacted on model results)

Red – Change needed (omission/error that could make the model findings subject to challenge and which requires correction/further work/ explanation)

1 Model Review

1.1 General

NRW have carried out a very basic check of this model, this consisted of checking the hydrology, report and therefore methodology and a simple QA of the results.

1.2 Hydrology Review

Good to see a flood estimation calculation record has been completed, even if it is a bit sparse.

The catchment is too small for the FEH Webservice DTM to pick up. As such, a nearby donor site has been used to derive peak flow estimates, with flows scaled by area to make them applicable to the subject site. This approach is acceptable, however the way this approach is presented in the calculation record is confusing and warrants clarification. For example:

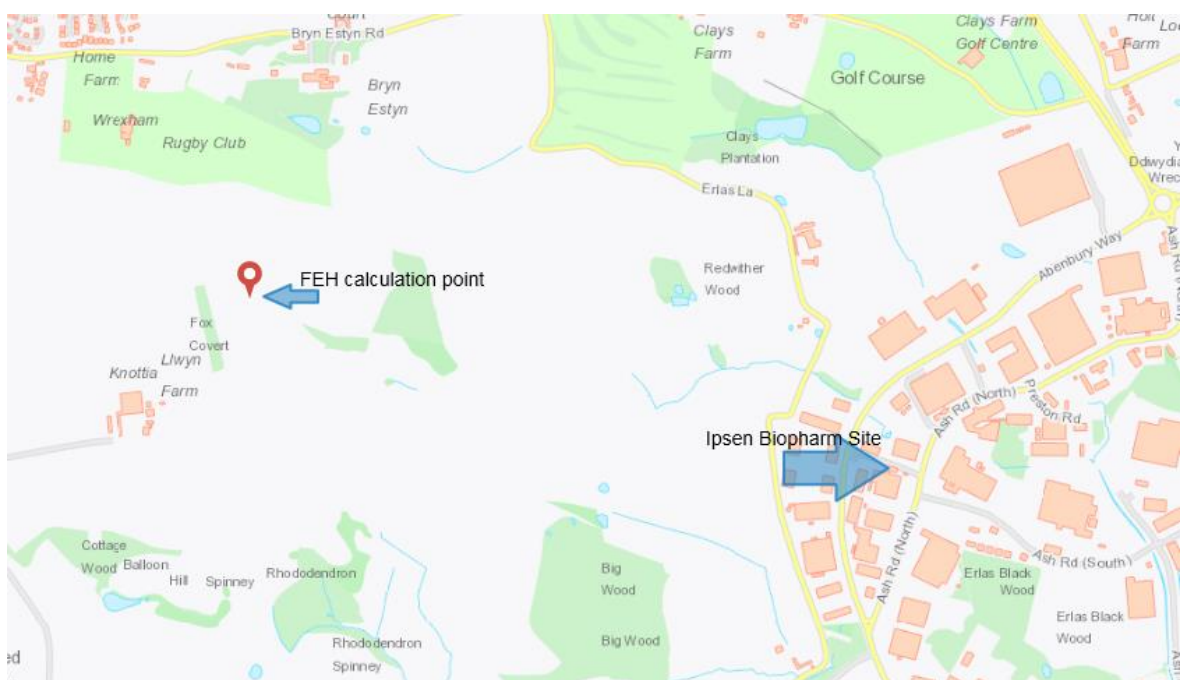
- Where is the donor site located?
- Section 2. The grid reference plots in the middle of a field – please check.

2 Locations where flood estimates required

The table below lists the locations of subject sites. The site codes listed below are used in all subsequent tables to save space.

2.1 Summary of subject sites

Site code	Watercourse	Site	Easting	Northin g	AREA on FEH Web Service (km ²)	Revised AREA if altered
RC6472	Unnamed	Ipsen Biopharm	336065	350672	0.51	



- Section 2. Is this site (RC6472) and associated catchment descriptors presented in the tables related to the actual subject site catchment, or the donor catchment?
- If Section 2 details do relate to the donor site, what is the catchment area of the subject site?
- Table 3.3. Gives QMED estimate of 0.08m³/s. Table 3.6 gives QMED of 0.07m³/s. Table 5.1 gives QMED of 0.08m³/s. Table 5.5 gives QMED of 0.07m³/s. I assume these two values represent QMED for the donor site (0.08m³/s) and QMED scaled by catchment area to the subject site (0.07m³/s) ? Or are they typos? Please can this be explained clearly.

Pooling group composition and flood growth curve derivation look OK. Please note I've not scrutinised suitability of each site myself, but explanations given by the consultant for removing/retaining certain sites seem logical.

REFH(1) has been used in the Morris method to derive the 1000 year estimate. ReFH(1) was superseded by REFH2 in 2016, which incorporates improved science and also utilises the updated FEH2013 rainfall model. ReFH1 should not be used. Please update the calculations using ReFH2 (version 2.2 or later). Furthermore, the "Morris" method (also known as Hybrid approach) should be used to calculate peak flow estimates for all return periods in excess of the 1 in 100 year event, and not just the 1000 year event.

1.3 Modelling Methodology

The cell size used for the model has been reported as 1m, which is fine however the timestep has been reported as 2s and a check of the .tlf shows 2s has been used also. This is outside the recommended duration, which is a timestep of between ½ and ¼ of the cell size which is recommended to be used.

How has the pond been represented within the model? More detail is required on this in the report. It looks like extended 1d cross sections have been used to represent this area, which is fine. However, I would like to understand how the bed level have been chosen for the pond sections and how the model accounts for the fact that the pond, prior to any flood event, would already be spilling over the weir structure. We want to ensure the pond is not over attenuating flows and normal day water levels are already present in the pond prior to any flood flow being added to the model. The storage capacity of the pond could be critical in this modelling work.

The manning's value of 0.04 is quite high for open car parks especially given that a value of 0.02 has been used for paved areas. At present in the model this does not really matter as no out of bank flow is shown, it would have more of impact if flood waters were shown to reach there's areas especially as there are large areas of car parks in the model extent.

How well does the topographical survey obtained tie in with the LiDAR data used within this area, this information should be included in the report. In places along the bank tops there has been greater than 3m alterations in height from that of the LiDAR data.

2 Results Review

2.1 Baseline Results

At present the results look ok, with any stability issues or problems documented and explained within the report. This may alter however once the above cell size has been altered or any alterations to the pond are made. Once some or all these alterations have been carried out the results would need re looking at.

3 Conclusions and Recommendations

At present based on the comments in red above I would recommend that the modelling is not appropriate to support a FCA. Once the above points have either been rectified or explained in sufficient detail to satisfy our concerns, we will re-evaluate the appropriateness of the modelling work to support a FCA.

Please DO NOT DELETE THIS SECTION BREAK



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29 Newport Road
Cardiff
CF24 0TP

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